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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/981,101	10/16/2001	Saku Lahti	297-010577-US(PAR)	5357

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FAIRFIELD, CT 06824

EXAMINER

HARVEY, DIONNE

ART UNIT	PAPER NUMBER
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2643

DATE MAILED: 02/04/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

09/981,101

Applicant(s)

LAHTI ET AL.

Examiner

Dionne N Harvey

Art Unit

2643

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-30 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-11 and 14-30 is/are rejected.
- 7) ☒ Claim(s) 12 and 13 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 01 October 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_.

## DETAILED ACTION

### *Specification*

1. Applicant is reminded of the proper language and format for an abstract of the disclosure.

The abstract should be in narrative form and generally limited to a single paragraph on a separate sheet within the range of 50 to 150 words. It is important that the abstract not exceed 150 words in length since the space provided for the abstract on the computer tape used by the printer is limited. The form and legal phraseology often used in patent claims, such as "means" and "said," should be avoided. The abstract should describe the disclosure sufficiently to assist readers in deciding whether there is a need for consulting the full patent text for details.

The language should be clear and concise and should not repeat information given in the title. It should avoid using phrases which can be implied, such as, "The disclosure concerns," "The disclosure defined by this invention," "The disclosure describes," etc.

### *Claim Rejections - 35 USC § 103*

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. **Claims 1-11,14-17,26,27 and 28** are rejected under 35 U.S.C. 103(a) as being unpatentable over **Figures 1 and 2 of the Applicant's Admitted Prior art**, in view of **Jager (US 6,067,449)**.

Regarding claim 1, **Prior art figure 2** illustrates, a method for receiving radio frequency signals, said method comprising the steps of: receiving a first received signal

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component of the radio signal using a first antenna **101a** having first properties and receiving a second received signal component of the radio signal using a second antenna **101b** having second properties, which are different from the first properties, processing a received signal component to produce a sampled signal component having an In-phase and a Quadrature-phase component, producing at least one combined signal, which is a linear combination of at least two sampled signal components, and selecting at least one set of complex values for coefficients of the linear combination so that a quality of a combined signal corresponding to each set of coefficient values is at a certain time at least equal to a quality of the one of the sampled signal components having the best quality. Prior art **figure 2** does not clearly teach alternately connecting the antennas via a switching element to radio frequency means so that the received signal components are interleaving each other with respect to time and so that a first part of a certain piece of transmitted information is received with the first antenna and a second part of said piece of transmitted information is received with the second antenna.

In **figure 3**, Jager teaches alternately connecting the antennas **112,110** via a switching element **336** to radio frequency means **306-316** so that the received signal components are interleaving each other with respect to time (**see claim 4 which specifically described the invention as switching between antenna based upon the calculated measurement over a predetermined period of time**) and so that a first pArt of a certain piece of transmitted information is received with the first antenna and a second pArt of said piece of transmitted information is received with the second

antenna. It would have been obvious for one of ordinary skill in the art at the time of the invention to alter the Prior art such that it includes a selectable switch for selecting an appropriate antenna, as taught by Jager, for the purpose of better adapting a mobile communication device to the effects of path loss.

Regarding claim 2, in **column 6, lines 1-5**, Jager teaches that the sets of coefficient values is/are selected using the signal-to-noise ratio as a measure of the quality of a signal.

Regarding claim 3, in the Applicant's discussion of the prior art on **page 3** of the specification, the Applicant admits that it's well known in the prior art to select the coefficient values by minimizing the effect of multipath propagation.

Regarding claim 4, on **page 3 lines 4-6**, the Prior art appears to teach that the polarization properties of the combined signal may be adjusted.

Regarding claim 5, on **page 3, lines 15-27**, the Prior art appears to teach that the angular properties of the combined signal may be adjusted.

Regarding claim 6, shown in **Prior art figure 2**, and discussed in the **first paragraph of page 4** in the specification, the Prior art teaches that the spatial properties of the first antenna and the second antenna are different.

Regarding claim 7, in **page 2, lines 19-21**, the Prior art appears to teach that the radio signal is a narrow spectrum signal comprising a sequence of symbols and said piece of transmitted information is a symbol.

Regarding claim 8, **Prior art figure 1** teaches that wherein a spread spectrum signal, corresponding to at least one sequence of data bits spread with a spreading

code, is received, and said method further comprises the step of correlating **via 113** the received signal components at a certain phase after the receipt of signal components with at least one local spreading code.

Regarding claim 9, in **page 2, line 17-18**, the Prior art appears to teach that the received signal components are correlated with the local spreading codes before they are sampled.

Regarding claim 10, in **page 2, lines 4-27**, Prior art appears to teach that the sampled signal components are correlated (**via 113 in figure 1**) with the local spreading codes.

Regarding claim 11, **Prior art figure 1** teaches that the combined signals are correlated with the local spreading codes.

Regarding claim 14, The Prior art appears to teach that said piece of transmitted information is a chip, **as broadly claimed**, which is received using at least two antennas **101a, 101b**.

Regarding claim 15, **Prior art figure 2** illustrates a receiver device comprising at least a first antenna **101a** having certain first properties, which is arranged to receive a first signal component, and a second antenna **101b** having certain second properties, which second properties are different from the first properties and which second antenna is arranged to receive a second signal component, processing means **100** arranged to process a signal component received with an antenna to a sampled signal component having an In-phase and a Quadrature-phase component, combination

means **201** arranged to linearly combine sampled signal components to at least one combined signal.

In **figure 3**, Jager teaches selection means **324** arranged to select at least one set of complex values for the coefficients of the linear combination so that a quality of a combined signal corresponding to each set of coefficient values is at a certain time at least equal to a quality of the one of the first or second sampled signal components having the better quality, and switching means **336**, whose first input is coupled to the first antenna **110** and second input is coupled to the second antenna **112** and whose output is coupled to the processing means and which is arranged to alternately couple the antennas to the processing means **306-316** so that the received signal components are interleaving each other with respect to time (**see claim 4 which specifically described the invention as switching between antennas based upon the calculated measurement over a predetermined period of time**) and so that a first part of a certain piece of transmitted information is received with the first antenna **110** and a second part of said piece of transmitted information is received with the second antenna **112**, and in that the processing means are adjusted to process interleaving signal components **via the switch element**. It would have been obvious for one of ordinary skill in the art at the time of the invention to alter the Prior art such that it includes a selectable switch for selecting an appropriate antenna, as taught by Jager, for the purpose of better adapting a mobile communication device to the effects of path loss.

Regarding claim 16, Jager teaches a receiver device further comprising second selection means **330**, which are arranged to select, based on the quality of the received signal components, a constant switch position for the switching means **336** for a certain period of time.

Regarding claim 17, on **page 3 lines 4-6**, the Prior art appears to teach that the polarization properties of the combined signal may be adjusted.

Regarding claim 26, on **page 3, lines 15-27**, the Prior art appears to teach that the angular properties of the combined signal may be adjusted.

Regarding claim 27, shown in **Prior art figure 2**, and discussed in the **first paragraph of page 4** in the specification, the Prior art teaches that the spatial properties of the first antenna and the second antenna are different.

Regarding claim 28, Prior art **Figure 1**, teaches correlation means **113** arranged to correlate with the received signal at least one local spreading code.

3. **Claims 18,29 and 30** are rejected under 35 U.S.C. 103(a) as being unpatentable over **Figures 1 and 2 of the Applicant's Admitted Prior art**, in view of **Jager (US 6,067,449)** as applied to claim **17 and 28** above, and further in view of **Jones (US 6,531,985)**.

Regarding claim 18, the combination of the Admitted prior art and Jager, does not clearly teach that the first antenna is right hand circularly polarized antenna and the second antenna is a left hand circularly polarized antenna.



In **column 11, lines 42-56**, Jones teaches that in mobile electronic devices, circularly polarized antennas provide the benefit of working better in different operating environments. Therefore, it would have been obvious for one of ordinary skill in the art at the time of the invention to combine the teachings of the Admitted Prior art, Jager and Jones, using antennas being circularly polarized in the right and left hand directions, for the reasons stated.

Regarding claims 29 and 30, in **column 11, lines 1-7**, Jones teaches that a mobile station with the disclosed antenna arrangement may include GPS applications.

4. **Claims 19,20,23 and 24** are rejected under 35 U.S.C. 103(a) as being unpatentable over **Figures 1 and 2 of the Applicant's Admitted Prior art**, in view of **Jager (US 6,067,449)** and **Jones (US 6,531,985)** as applied to claim **18** above, and further in view of **Edvardsson (US 6,334,048)**

Regarding claim 19, The combination of the Admitted Prior art, Jager and Jones, does not clearly teach that the first antenna and the second antenna are arranged as a single dual sense antenna having a first feed for right hand circularly polarized operation and a second feed for left hand polarized operation.

In figure 1, Edvardsson teaches a single dual sense antenna **10** having a first feed **20** for right hand circularly polarized operation and a second feed **20** for left hand polarized operation. Also see **column 4, lines 15-18**. In **column 5, lines 35-38**,

Edvardsson teaches that an antenna, so constructed, has use for receiving signals in positioning systems using satellites e.g. GPs. Therefore, it would have been obvious for one of ordinary skill in the art at the time of the invention to alter the teachings of the Admitted Prior art, Jager and Jones, as taught by Edvardsson, for the reasons stated.

Regarding claim 20, in **column 11, lines 1-7**, Jones teaches a benefit of using patch antennas in mobile devices having GPS applications, the combined disclosures of the references thereby reading on "a dual sense patch antenna".

Regarding claim 23, in **column 11, lines 1-7**, Jones teaches a benefit of using patch antennas in mobile devices having GPS applications, the combined disclosures of the references thereby reading on "a dual polarized patch antenna".

Regarding claim 24, in **column 11, lines 31-40**, Jones teaches that F antennas may be substituted by one of ordinary skill in the art, without undue experimentation. The combined disclosures of the references thereby teaching " wherein the first antenna is a first planar inverted F antenna and the second antenna is a second planar inverted F antenna, whose direction is different from the direction of the first antenna."

5. Claims **21,22 and 25** are rejected under 35 U.S.C. 103(a) as being unpatentable over **Figures 1 and 2 of the Applicant's Admitted Prior art**, in view of **Jager (US 6,067,449)** as applied to claim **17** above, and further in view of **Edvardsson (US 6,334,048)**.

Regarding claim 21, the Jager reference teaches the use of first and second differently polarized antennas. The combined teachings of the Admitted Prior art and Jager, does not clearly teach that the first and second antennas are linearly polarized.

**In column 5, lines 49-57**, Edvardsson discloses that linearly polarized antennas in mobile communication devices have utility in terrestrial communication systems. It would have been obvious for one of ordinary skill in the art at the time of the invention to combine the teachings of the Prior art, Jager and Edvardsson, using two linearly polarized antennas, thereby adapting the mobile communication device for operation in terrestrial systems such as GSM, PCN, PCS, cellular and others.

Regarding claim 22, claim 22 is rejected for the same reasons set forth in the rejection of claim 19. Also see **figure 2** in the Edvardsson reference and the discussion of figure 2 in **column 5, line 58 – column 6, line 6**.

Regarding claim 25, shown by phasing network **21** in figure 1, Edvardsson teaches "the first linearly polarized antenna is arranged to have polarization properties which are substantially orthogonal to the polarization properties of the second linearly polarized antenna."

#### ***Allowable Subject Matter***

6. Claims 12 and 13 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

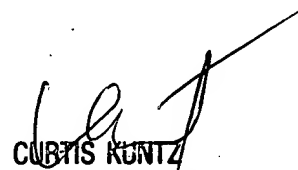
***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dionne N Harvey whose telephone number is 703-305-1111. The examiner can normally be reached on 9-5:30 M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Curtis Kuntz can be reached on 703-305-4708. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Dionne Harvey

  
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